A Novel Plasma-Based Compressor Stall Control System, Phase II

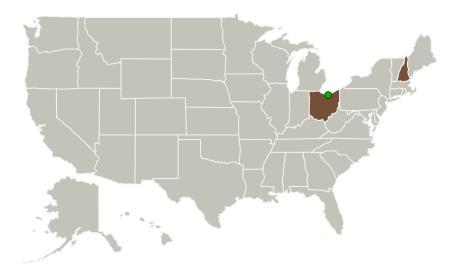


Completed Technology Project (2014 - 2017)

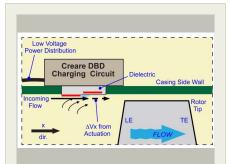
Project Introduction

Modern aircraft gas turbine engines utilize highly loaded airfoils in both the compressor and turbine to maximize performance while minimizing weight, cost, and complexity. However, high airfoil loading increases the likelihood of flow separation at lower mass flow rates. Dielectric Barrier Discharge (DBD) plasma actuators have been shown to be a very promising technique for compressor stall control. DBD devices can either be installed directly on rotor/stator surfaces or the compressor endwalls to control rotor tip flow. A fundamental challenge in driving DBD actuators is providing appropriate electrical waveforms to the devices. Creare proposes the development of an innovative compressor stall system which enables (1) substantially higher produced thrust than existing DBD actuator systems, (2) implements a unique excitation waveform that optimizes thrust production by DBD actuators, and (3) provides the potential ability to control spike-type compressor stall through controlling compressor tip leakage flow.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Туре	Location
Creare LLC	Lead Organization	Industry	Hanover, New Hampshire
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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Small Business Innovation Research/Small Business Tech Transfer

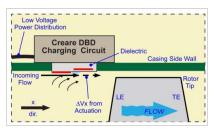
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Completed Technology Project (2014 - 2017)

Primary U.S. Work Locations		
New Hampshire	Ohio	

Images



Briefing Chart Image

A Novel Plasma-Based Compressor Stall Control System, Phase II (https://techport.nasa.gov/imag e/136803)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Creare LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Richard W Kaszeta

Co-Investigator:

Richard Kaszeta

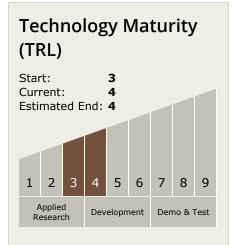


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Technology Areas

Primary:

- TX15 Flight Vehicle Systems

 └─ TX15.1 Aerosciences
 - ☐ TX15.1.5 Propulsion Flowpath and Interactions

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System

